

What is claimed is:

1. A carrier shape measurement device, comprising:

a stage which supports a carrier which is to be a subject of measurement; and

5 a measurement section which measures a shape of the carrier, wherein

said stage comprises kinematic coupling pins to support the carrier by a kinematic coupling.

2. A carrier shape measurement device according to Claim 1,
10 wherein said stage comprises a surface which coincides with or is parallel to at least one of a horizontal datum plane, a facial datum plane, and a bilateral datum plane which are specified with respect to the carrier which is supported by said kinematic coupling.

15 3. A carrier shape measurement device according to Claim 2, wherein said measurement section measures the shape of the carrier by taking as a reference said coinciding or parallel surface of said stage.

4. A carrier shape measurement device according to Claim 2,
20 further comprising:

a shifting section which shifts said measurement section relatively to the carrier, wherein

a direction of shifting by said shifting section is parallel or perpendicular to said coinciding or parallel surface
25 of said stage.

5. A carrier shape measurement device according to Claim 1, further comprising:

a calculation section which calculates results of measurement by said measurement section, wherein

5 said calculation section derives coordinates of a center of a wafer which is loaded into the carrier by substituting coordinates of a plurality of points upon an edge of the wafer which have been measured by said measurement section, into a predetermined equation.

10 6. A carrier shape measurement device according to Claim 1, wherein said stage comprises a mechanism section which vibrates said kinematic coupling pins.

7. A carrier shape measurement device according to Claim 6, further comprising:

15 a detection section which detects whether or not an engagement between the carrier and said kinematic coupling pins is normal; and

a control section which, if said detection section has detected that said engagement is normal, stops vibrating by said
20 mechanism section.

8. A carrier shape measurement device according to Claim 1, wherein each of said kinematic coupling pins comprises an air ejection orifice for ejecting air from its tip towards the carrier, and a flow conduit which conducts air to said air
25 ejection orifice.

9. A carrier shape measurement device according to Claim 8,
further comprising:

a detection section which detects whether or not an
engagement between the carrier and said kinematic coupling pins
5 is normal; and

a control section which, if said detection section has
detected that said engagement is normal, stops supplying air
to said flow conduit.

10. A carrier shape measurement device according to Claim 1,
10 wherein:

said kinematic coupling pins comprises three pins
arranged in a predetermined arrangement; and

in order to support the carrier in a desired orientation
with said kinematic coupling pins, said stage is made with such
15 a structure that an orientation of the arrangement of said three
pins upon said stage can be changed while the arrangement is
being maintained relatively between said three pins.

11. A carrier shape measurement device according to Claim 10,
wherein:

20 said stage comprises a plate which comprises said
kinematic coupling pins, and a support portion upon which said
plate is loaded; and

said support portion comprises a mechanism which can
change a loading direction of said plate, in order to change
25 the orientation of the arrangement of said three pins.

12. A carrier shape measurement device according to Claim 10, wherein said stage comprises a plate which comprises said kinematic coupling pins, and a rotation section which rotates said plate.

5 13. A carrier shape measurement device according to Claim 10, wherein said stage comprises a plurality of kinematic coupling pins whose arrangements of the three pins differ from one another, a mechanism section for projecting and retracting said plurality of kinematic coupling pins from said stage, and a control section
10 which controls said mechanism section so as selectively to project one of said plurality of kinematic coupling pins from said stage.

14. A carrier shape measurement device according to Claim 10, further comprising:

15 a coordinate conversion section which converts coordinates of results of measurement according to the orientation of said kinematic coupling pins upon said stage.

15. A carrier shape measurement device according to Claim 11, further comprising:

20 a dimension calculation section which calculates dimensions of the carrier from results of measurement by said measurement section, wherein

said dimension calculation section calculates the dimensions of the carrier either by using coordinates which
25 result from said measurements just as they are, or by using

coordinates which have been converted by said coordinate conversion section.

16. A carrier shape measurement device according to Claim 1, further comprising:

5 a calculation section which calculates results of measurement by said measurement section, wherein

said calculation section derives coordinates of a center of a wafer which is loaded into the carrier by adding a dead weight bending amount, which has been determined in advance from
10 a weight of the wafer, to at least one of coordinates of a wafer support portion of the carrier which have been measured by said measurement section, and coordinates of a point upon an edge of the wafer which have been measured by said measurement section.

15 17. A carrier shape measurement device according to Claim 1, further comprising:

a calculation section which calculates results of measurement by said measurement section, wherein

said calculation section, by using coordinates of left
20 and right wafer support portions of the carrier which have been measured by said measurement section, derives an inclination of a wafer which is loaded into the carrier and which is supported by said wafer support portions.

18. A carrier shape measurement device, comprising:

25 a stage which supports a carrier which is to be a subject

for measurement;

an imaging section which forms an image of the carrier;

and

a calculation section which calculates image formation

5 results of said imaging section, wherein

said imaging section comprises an objective lens, and an
operational distance of said objective lens is longer than a
distance from an opening of an aperture for taking a wafer out
from the carrier and inserting it thereinto, to a wafer support
10 portion within the carrier.

19. A carrier shape measurement device according to Claim 1,
wherein said stage comprises a surface which coincides with or
is parallel to a surface based upon a designed shape of the
carrier.

15 20. A carrier shape measurement device according to Claim 19,
wherein said measurement section measures a shape of the carrier
by comparison with said coinciding or parallel surface of said
stage.